powers of locution, he was also exceedingly successful with his experiments. His speeches, whether prepared or extempore, were always models of lucidity, and when moved he was capable of attaining to real eloquence. From a combined scientific and literary point of view he possessed not a few points of resemblance with Tyndall, though very different himself in other ways from Tyndall as a man.

The late Sir William White, himself a very fluent and effective speaker, and himself a no mean judge of oratory, once told the present writer that he had heard Prof. Thompson deliver an address at a religious meeting in the Friends' Meeting House at York, and that it was the best sermon he had ever heard in his life. Nor were Prof. Thompson's powers of speech limited to his own language, as he was equally at home both in conversation, and when speaking in public, in the French, German, and Italian languages. In his writings also he showed himself to be a master of English. If the subject was scientific his language was always extraordinarily clear and to the point, which explains the remarkable success of some of his books. His treatise on "Dynamo Electric Machinery," for example, which was first published in 1884, has run to seven English editions and has further been translated both into French and German. Again, his "Elementary Lessons in Electricity and Magnetism" has been translated into French, German, Italian, Polish, and Japanese, and, in addition, has had a circulation of more than one hundred and fifty thousand copies in this country; while other of his technical books, such as his "Electro-Magnet," his "Polyphase Electric Currents and Motors," and his "Light, Visible and Invisible," together with many of his other scientific writings and lectures, have met with world-wide success.

To turn to Prof. Thompson's efforts of a more purely personal character, his fine literary style was turned to good use in his life of Faraday, his biographical notice of Philip Reis and his telephone, and his recent two-volume "Life of Lord Kelvin." Then, again, he was always keenly alive to the historical side of science, particularly from a romantic point of view, as is seen from the large amount of time and labour that he devoted to old books, such as the "De Magnete" of William Gilbert of Colchester, physician to Queen Elizabeth, which book he assisted to translate. He also devoted attention to, and reprinted, some of the seventeenth-century works on magnetism of Robert Boyle. Mention should also be made of the translation he made from the original Latin of the epistle on magnetism of Peter Peregrinus, written in the year 1269 by a soldier in the trenches during a siege, which translation he caused to be privately printed, ornamenting the coloured initial letters with his own hand. For, in addition to being a man of science and a man of letters, Prof. Thompson was also an artist who was able himself to draw the portrait of Faraday that illustrates his life of that great man, and whose water-colours of Alpine scenery have appeared on the walls of the Royal Academy.

As a man Prof. Thompson was a genial and interesting companion of wide general interests and sympathies. He lived up to the high standard of the Society of Friends, of which he was a lifelong member, and was, indeed, a very good and true friend to many, to whom he tendered a helping hand in his quiet unostentatious way. Perhaps his chief characteristic was his amazing industry, and it is to this that is due the vast amount of work that he accomplished, though, passing away as he did at less than sixty-five, he has not attained even to the three score years and ten of the Psalmist, much less to the four score years which are now so commonly surpassed by many of our grand old men of science.

Few of the many who attended the service "For Worship," in memory of Prof. Thompson, on Friday last, in the Friends' Meeting House, St. Martin's Lane, will readily forget that remarkable and moving occasion. Many of the veterans of British science were there assembled, and the complete absence of any approach to form or ceremony, and the austere simplicity of the proceedings, were very impressive and carried one back to the days of the Puritans. Such was a fitting finale to a strenuous and distinguished career, by the close of which science has lost an enthusiastic leader and an illuminating exponent. Amongst those who knew Prof. Thompson personally all will deplore the departure of a trusted and very sincere friend —one who will not readily be forgotten.

A. A. Campbell Swinton.

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## *WHAT SCIENCE SAYS TO TRUTH.*

As is the mainland to the sea,
Thou art to me:
Thou standest stable, while against thy feet
I beat, I beat!

Yet from thy cliffs so sheer, so tall,
Sands crumble and fall;
And golden grains of thee my tides each day
Carry away.

William Watson.

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## *NOTES.*

We regret to see the announcement of the death on June 18 of Dr. R. H. Scott, F.R.S., superintendent of the Meteorological Office from 1867 to 1900.

The longevity of men of science has often been brought under notice. On Saturday next, June 24, the Rt. Hon. Henry John Moreton, Earl of Ducie, F.R.S., enters on his ninetieth year, having been born in 1827. His lordship is the senior fellow of the Royal Society in point of election to that body, this dating from 1855. When Lord Moreton, he obtained from the Jurassic limestone of Burford the fossil species of star-fish named by Prof. Edward Forbes *Solaster moretoni*, in honour of the finder. In connection it may be mentioned that Sir Robert Palgrave, F.R.S., entered on his ninetieth year in the early part of this month, while Sir William Crookes attained the age of eighty-four on Saturday last, June 17.

DR. AXEL GAVELIN has been appointed director of the Swedish Geological Survey.

THE Sulitelma Company has made a grant of 20,000 kronen (about 1100*l*.) to assist geological research in Norway.

A CORRESPONDENT of *Svenska Dagbladet* states that in the Berlin Zoological Gardens carnivores are fed no longer on horseflesh, but on general offal obtained in the slaughter-houses, especially those of large preserving factories, and other places. Animals formerly fed on oats are now given various roots, and it is found that they appreciate these much better when boiled.

THE special correspondent of the *Times* at Port Stanley (Falkland Islands) reports that the ship sent by the Uruguayan Government for the relief of the members of Sir Ernest Shackleton's expedition on Elephant Island left there on Saturday, June 17.

AT a recent meeting of the Optical Society the president (Mr. F. J. Cheshire) stated that it had recently been discovered by a well-known London optician that the apochromatic systems of Carl Zeiss often, if not always, contained a strong negative lens made from ordinary potash alum. This lens had also been found in combination in such systems with a lens made from fluorspar.

A SCIENTIFIC lawyer writes:—"In the legal profession the axiom that 'a man who gets his law for nothing feels that he has got his money's worth' has assumed the purple among accepted facts." On this principle the best way to secure appreciation for the expert knowledge which men of science are continually giving gratuitously to Government departments would be to require reasonable payment for it.

THE death is announced, in his sixtieth year, of Mr. C. Sooysmith, consulting engineer, of New York, who introduced into the United States the so-called freezing process for excavating, and took out many patents for its application to the building of subaqueous tunnels. He also inaugurated the pneumatic caisson method for constructing the foundation of high buildings, and constructed the foundation for a number of large bridges, including the bridge over the Schuylkill River at Philadelphia and the Harlem River bridge at New York.

AT the annual meeting of the American Association for the Study and Prevention of Tuberculosis it was announced that it had received from the Metropolitan Life Insurance Co. a gift of 20,000*l*. for a "community experiment," with the idea of proving that tuberculosis can be controlled. First, there is to be selected a suitable community, of a character as nearly typical American as possible. In this community will be placed a staff of experts, who will get in touch with every person living within its boundaries who either has tuberculosis or has been exposed thereto. The staff will then, it is hoped, get every case under supervision, and control the disease in that particular town. The experiment is to last three years.

THE President of the Board of Trade has appointed a Committee to investigate the principal causes which have led to the increase of prices of commodities of general consumption since the beginning of the war, and to recommend such steps, if any, with the view of ameliorating the situation as appear practicable and expedient, having regard to the necessity of maintaining adequate supplies. The Committee is constituted as follows:—Rt. Hon. J. M. Robertson, M.P. (chairman), Mrs. Pember Reeves, Mr. W. C. Anderson, M.P., Prof. W. J. Ashley (professor of commerce, University of Birmingham), Mr. John Boland, M.P., Mr. T. Brodrick, Sir Gilbert Claughton, Bart., Mr. J. R. Clynes, M.P., Mr. R. E. Prothero, M.P., Mr. T. Shaw, J.P., and Sir W. Capel Slaughter. Mr. E. C. Ramsbottom, of the Board of Trade, will act as secretary to the Committee.

THE death is announced on June 13 of Commander C. B. Neate, R.N. Commander (then Lieutenant) Neate was the head of the British expedition to Rodriguez, in the Indian Ocean, for the observation of the transit of Venus in 1874. Three stations in the island were occupied, Lieut. Neate himself being at Point Venus, where all contacts were successfully observed. The "black drop" was seen, both at ingress and egress. At ingress the whole planet was distinctly seen outside the sun's limb, the following limb of Venus being bright, "like a very young moon." The observations are fully described and illustrated in the volume edited by Sir G. B. Airy, and published in 1881. Lieut. Neate was also a member of the expedition for the transit of 1882, being stationed at Bermuda, where, however, owing to cloud, the observations were only partially successful.

IN some agricultural districts the times at which labourers commence work have been advanced by one hour, thus cancelling the operation of the Summer Time Act. The reason given for this action is that at the earlier hour there is too much dew to enable farm work to be carried on. The advantage of the later lighting-up time in houses is also apparently to be discounted by an increase in the cost of artificial illumination, for the Brompton and Kensington Electricity Supply Co., Ltd., has just made the following announcement:—"In consequence of the operation of the 'Daylight Saving' Act, and in furtherance of the appeal of the Board of Trade to economise as far as possible in the use of electricity and gas (owing to the need for reducing the consumption of coal), the price of current will be increased by a further 10 per cent., to take effect from the date of reading the meters at the end of the current quarter." Other companies are also making this additional charge, which means that consumers will now have to pay a 20 per cent. increase on the cost of the units used, as there has been for some time an increase of 10 per cent. upon the pre-war rate. Whatever economy is effected in the consumption of current and gas by the introduction of the Daylight Saving measure will not, therefore, be to the advantage of the consumer, who will, under the increased rate, have to pay much the same for illumination as in corresponding periods before the Act came into force.

THE Standing Committee on Engineering appointed by the Advisory Council for Scientific and Industrial Research held its first meeting on Wednesday, June 7. The Committee has been so constituted as to represent both the scientific and the industrial sides of engineering, and includes the following members nominated by the professional associations:—Institution of Civil Engineers, Sir Maurice Fitzmaurice; Institution of Electrical Engineers, Mr. J. S. Highfield; Institution of Mechanical Engineers, Dr. Dugald Clerk; Institution of Naval Architects, Sir Archibald Denny, Bart.; N.E. Coast Institution of Engineers and Shipbuilders, Mr. Herbert Rowell; Manchester Association of Engineers, Mr. Alfred Saxon; Institution of Engineers and Shipbuilders in Scotland, Mr. James Brown; and the following members appointed directly by the Advisory Council:—Mr. F. R. Davenport, Mr. Alfred Herbert, Prof. Bertram Hopkinson, F.R.S., Mr.

C. H. Merz, Mr. V. L. Raven, Mr. A. A. Remington, Mr. G. Gerald Stoney, F.R.S., Mr. Douglas Vickers, Prof. Miles Walker. The Advisory Council has appointed Sir Maurice Fitzmaurice to be chairman of the Committee.

The formation by the Advisory Council for Scientific and Industrial Research of a Standing Committee on Mining, constituted so as to represent both the scientific and industrial sides, has now been completed. The Standing Committee includes the following members nominated by professional associations:—Institution of Mining Engineers: Sir William Garforth, Dr. John Haldane, Dr. R. T. Moore, Mr. Wallace Thorneycroft; Institution of Mining and Metallurgy: Mr. Edward Hooper, Mr. Edgar Taylor; Iron and Steel Institute: Prof. H. Louis; the South Wales Institute of Engineers: Mr. W. Gascoyne Dalziel; and the following members appointed directly by the Advisory Council:—Sir Hugh Bell, Bart., Mr. Hugh Bramwell, Lieut.-Col. W. C. Blackett, Prof. Cadman, Prof. Frecheville, Mr. Bedford McNeill, Mr. Hugh F. Marriott, Sir Boverton Redwood, Bart., Mr. C. E. Rhodes. The Advisory Council has appointed Sir William Garforth to be chairman. The Committee is divided into two sections, as follows:—*Section on the Mining of Iron, Coal, and Hydrocarbons*: Sir William Garforth (chairman), Sir Hugh Bell, Bart., Mr. Hugh Bramwell, Lieut.-Col. W. C. Blackett, Prof. Cadman, Mr. W. Gascoyne Dalziel, Dr. John Haldane, Prof. Louis, Dr. R. T. Moore, Sir Boverton Redwood, Bart., Mr. C. E. Rhodes, Mr. Wallace Thorneycroft. *Section on the Mining of Minerals other than Iron, Coal, and Hydrocarbons*: Mr. Edgar Taylor (chairman), Sir Hugh Bell, Bart., Prof. Frecheville, Mr. Edward Hooper, Prof. Louis, Mr. Bedford McNeill, Mr. Hugh Marriott.

General Joseph Simon Gallieni, whose death was recently announced at the age of sixty-seven, had achieved fame, not only as a soldier, but as an explorer and colonial administrator. In 1880 he ascended the Senegal and explored the course of its two principal tributaries, the Ba-Khoy and the Ba-Fing, and the hitherto unknown regions between the Senegal and the Niger, and then descended the Niger to Segu Sikovo. Seven years later he was again exploring in the same region, and his work had much to do with the extension of French influence in the western Sudan and Timbuctu. In 1892 Colonel Gallieni was sent to Tongking, and combined much topographical work with his arduous military duties. But perhaps the most difficult task he ever undertook, and the one in which he was most successful, was his governorship of Madagascar. In nine years he rescued that island from a state of chaos and turned it into a possession worthy of France. Roads and a railway were built, agriculture put on a firm basis, mining was developed, and education taken in hand—to mention but a few of General Gallieni's works. Lastly, a detailed survey of Madagascar was commenced. General Gallieni distinguished himself in the Franco-German war of 1870, and in the present war was entrusted in September, 1914, with the defence of Paris at a time when the enemy's forces were advancing. This task General Gallieni was happily spared by the repulse of the enemy at the Marne.

A summary of the weather for the spring season for the several districts of the United Kingdom, collated by the Meteorological Office from the weekly returns for March, April, and May, shows that beyond an excessive amount of rain the conditions were fairly normal in spite of the fickle character of the weather. The mean temperature was below the normal in all districts except the north-east and east of England, but the deficiency was small, except in Ireland, where it amounted to nearly 2° F. Rainfall was in excess of the average, except in the north of Scotland, where the deficiency was only 0·04 in. The most abnormal rainfall was 153 per cent. of the average in the east of Scotland. Sunshine was deficient over the entire kingdom. Summer has commenced with exceptionally cold weather over the whole of the British Isles. The London reporting station of the Meteorological Office at South Kensington has no day temperature higher than 65° from June 1 to 16, the mean of the maximum readings for the period being 59·5°, which is the normal for the middle of April or October. It is 6° lower than the average of the day temperature in May last, and is only 1° warmer than the average maximum for last April. Several days have been colder than on some days in January last. The Greenwich records only show one colder June day in the last seventy-five years than June 12 this year, when the thermometer did not exceed 50°, the exception occurring on June 19, 1903. Only three Junes in the last seventy-five years have failed to record a London temperature of 70° in the first sixteen days; the exceptions are 1909, maximum 68°; 1860, maximum 67°; and 1843, maximum 69·9°.

The Executive Council appointed for the purpose of carrying on the management of the Imperial Institute under the Secretary of State for the Colonies has been constituted as follows, the members being appointed by the Departments, Ministers, and Governments named:—*Board of Trade*: Sir W. H. Clark, K.C.S.I., Mr. H. Fountain. *Secretary of State for India*: Sir J. P. Hewett, Mr. L. J. Kershaw. *President of the Board of Agriculture and Fisheries*: Sir Sydney Olivier, K.C.M.G. *Government of India*: Sir R. W. Carlyle, K.C.S.I. *Government of the Dominion of Canada*: Sir G. H. Perley, K.C.M.G. *Government of the Commonwealth of Australia*: Mr. Andrew Fisher, High Commissioner for Australia. *Government of the Union of South Africa*: Mr. Philip Schreiner, High Commissioner for South Africa. *Government of the Dominion of New Zealand*: Sir T. Mackenzie, K.C.M.G., High Commissioner for New Zealand. *Secretary of State for the Colonies*: Lord Emmott, Director, War Trade Department; Lord Islington, Parliamentary Under-Secretary for India; Lord Scarbrough, chairman, the Niger Co., Ltd.; Lord Burnham; Sir Algernon Firth, president, Association of Chambers of Commerce of United Kingdom; Sir Owen Philipps, K.C.M.G.; Sir W. Taylor, K.C.M.G., formerly Resident-General, Malay States; Sir M. F. Reid, chairman, Bombay Chamber of Commerce (on the recommendation of Secretary of State for India); Prof. W. R. Dunstan, director, Imperial Institute; Mr. R. Threlfall, formerly professor of physics in the University of Sydney, N.S.W.; Mr. R. M. Kindersly, director, Bank of England; Mr. D. O. Malcolm, director, British South Africa Company; Mr. G. E. A. Grindle, Colonial Office; Mr. T. C. Macnaghten, Colonial Office. The Government of Newfoundland will shortly appoint a representative on the Executive Council.

In the *Psychological Review* (vol. xxiii., No. 3) Mr. S. Bent Russell, in an article on "The Effect of High Resistance in Common Nerve Paths," discusses the means by which he thinks complex forms of behaviour may be interpreted in terms of nervous mechanisms, such as are generally admitted for the simpler forms of behaviour. His theory depends upon the assumption of the synapses, *i.e.* junctions or points of contact between neurons, as centres of resistance to the nervous impulse, and is an attempt to make more concrete the way in which competing paths may operate. He shows how a synapse mechanism, *i.e.* a system of interrelated neurons connected with other systems similarly constructed, by the varying degrees of resistance at their junction may serve for the selective distribution of impulses, and for the linking of one impression with another in the formation of habits.

The new volume of the *Anales* of the National Museum of Natural History of Buenos Aires (vol. xxvii., for 1915) contains a very varied series of contributions to our knowledge of the natural history of the Argentine Republic. Beginning with some observations on ants, by the director of the museum, Dr. A. Gallardo, it comprises several technical papers on entomology and botany, and deals with many other subjects, ranging from old maps of the River Plate and drawings of the fabulous beast known as the "succarath," to a detailed petrographical account of some granitic rocks. The exploration of a sepulchral cave on the coast of Chubut leads Dr. F. F. Outes to conclude that during the sixteenth and seventeenth centuries the Patagonians possessed only the bow and arrow as a weapon; that in the first third of the eighteenth century they began to use the imported horse, and then first employed the bolas. Photographs of well-preserved portions of three arrows, or javelins, provided with a stone tip, are given.

In the Journal of the South African Ornithologists' Union for December, which has just reached us, Mr. C. F. M. Swynnerton gives a long account of his experiments with captive birds in regard to their choice of insect food. For the most part his experiments were made with butterflies and moths and their caterpillars, though wasps, beetles, and other insects were also used. The Lepidoptera included both the protectively coloured, edible species and the warningly coloured, nauseous species. He finds that birds will readily eat even the most nauseous forms if they are hungry, but their readiness to accept these, and their ability to retain them when swallowed, decrease rapidly as hunger is satisfied. Thus the warningly coloured species derive benefit from their coloration only when their avian enemies can afford to pass them by. Even those birds with the smallest capacity for eating nauseous insects are able to eat one or two with apparent impunity, and even eagerness, when their stomachs are empty and the appetite is good. A bird with a rapid digestion is able to go on eating the most nauseous insects indefinitely, with frequent short intervals for assimilation, provided that no more tempting insects are within reach to carry the filling of the stomach well beyond the point at which such nauseous morsels are usually refused. Discrimination between edible and nauseating forms, the author contends, comes by experience only, and not instinctively.

In the *Kew Bulletin,* No. 3, ten new exotic fungi are described by Miss E. M. Wakefield. *Polyporus shoreae,* a serious disease of Sal (*Shorea robusta*), is illustrated by a photograph showing the large sporophore at the base of a tree-trunk in Bengal. *Cordyceps peltata,* a species parasitic on the larvæ of a Cryptorhynchus, which infests cultivated Codiæums in St. Vincent, differs from all other species in the very large spores, which, instead of breaking apart at every septum at maturity, only separate at the middle into two narrowly wedge-shaped halves. The description of the fungus is illustrated by text figures.

In the *Journal of Botany* for April Dr. W. Botting Hemsley contributes a paper on the flora of the Seychelles and Aldabra, giving descriptions of new flowering plants collected mainly during Prof. J. Stanley Gardiner's Percy Sladen Trust Expedition in 1905. Fifteen new species are described in the present contribution, which includes the Rubiaceæ and the description of a new Impatiens drawn up in 1910 by the late Sir J. D. Hooker. Some emendations in synonymy are also made. In a short introduction Dr. Hemsley gives an account of the botanical collections made in the Seychelles since 1901, when the flora of the islands was being critically studied by the author.

A subject of considerable importance to officers is most clearly and simply treated by Mr. E. A. Reeves in a paper on "Night Marching by Stars" in the *Geographical Journal* for June (vol. xlvii., No 6.). A good deal has recently been published on the subject, but no one perhaps has to such an extent the happy way of Mr. Reeves of putting technicalities in simple language. This paper, based on a lecture delivered at the Royal Geographical Society, deals both with the methods of finding the bearings of stars at any time and the more practical issue of using these bearings in marching.

An important paper in Swedish by V. Tanner, occupying more than 800 pages, describes the development and retreat of the continental ice in Finnish and Scandinavian Lapland (*Bull. de la Comm. géol. de Finlande,* No. 38, 1915). A good *résumé* in French is given. Numerous eskers have been examined, and the author points out that several of these have suffered since their formation from fluvioglacial erosion and deposition. He takes the view, now common, that the eskers arose in tunnels in or under the ice-sheet, the eskers with "centra," described by De Geer, from the Stockholm district being special cases of formation where the ice-front abutted upon a lake or sea. The author wishes to reserve judgment as to whether centra in the eskers of Lapland have been produced in the same manner. Good illustrations are given of the gorges cut by glacial waters during the epoch of ice-recession. The work represents field-observations, extending over several years, in a country sparsely inhabited, difficult to traverse, and of singular monotony from the scenic point of view. The glacial map forming plate i. which unfortunately has no place-names, sufficiently attests the author's industry, covering an area of 350,000 sq. kilometres, or some 135,000 sq. miles, between latitude 66° 30′ N. and the desolate tundras that bound the Arctic seas.

We have received *Revista de la Academia de Ciencias,* etc. (vol. i., No. 1, May, 1916; Zaragoza), and "La Ciencia, La Universidad, y La Academia," the latter being an inaugural address by Dr. Zoel G. de Galdeano. Their principal interest is that they show that Spain is beginning to appreciate the value of the exact sciences.

As supplementing the information given in the note on the "Mineral Resources of Great Britain," vol. v., which appeared in Nature of June 15 (p. 327), reference may be made to the account of the occurrences of molybdenum ores throughout the world which appeared in the Bulletin of the Imperial Institute, No. 2 of 1908. The information then published was brought up to date by a special circular, issued by the Imperial Institute in 1915, dealing with occurrences of molybdenite in the British Empire, which are either commercially productive or afford promise of becoming so. The collection and publication of information respecting the occurrence of economic minerals in the Colonies and India has for some years been a prominent part of the operations of the Imperial Institute.

IN an address to the American Institute of Electrical Engineers, which is reproduced in the April number of the Journal of the Franklin Institute, Mr. J. D. Ball, of the General Electric Company, Schenectady, gave a *résumé* of the results obtained by him in his recent examination of the magnetic properties of steels and other materials. He finds that for pure materials the reluctivity when plotted against magnetising force H gives a straight line from $H=10$ to 400, and that the hysteresis loss per cycle for such materials varies as the 1·6th power of the maximum induction. The deviations from these laws which have been found by other observers are due, he finds, to the use of impure or mixed materials. A mixture of two materials which follow both laws follows neither at high fields. In the case of steels the presence of scale on the surface is sufficient to account for the observed deviations from the two laws. The paper contains a number of tables and curves showing the magnetic properties of steel, cast-iron, and scale.

SMOKERS have hitherto been implored—or compelled through heavier taxation—to practise war economy by avoiding, or at least restricting their use of, tobacco. Now it seems that were one of the products of their indulgence to be collected they would become national benefactors in disguise. In an article in the *Chemical News* for June 2 Mr. B. A. Burrell points out that tobacco ash contains 20 per cent. of potash. A cigar, cigarette, and pipe of tobacco of ordinary sizes, weighing severally 106·5, 27, and 25·5 grains, will give ash containing respectively 6·5, 1·75, and 1·60 grains of potash. (We think that there must be some mistake in Mr. Burrell's figures, since in our experience ordinary cigarettes weigh eighteen to twenty to the ounce, whilst it is difficult to obtain more than fourteen "pipes" from an ounce of tobacco.) As regards the possibility of recovering this waste potash, Mr. Burrell found that from the smoke-room of a club 9¾ oz. of ash and unburnt tobacco could be collected in eight days; from the lounge of a large hotel 13 oz. in four days; from a large restaurant 2½ lb. in ten days, and from a music-hall (one-tenth part of the auditorium) 4 oz. after one performance. The tobacco consumed in the United Kingdom for the year ending March 31, 1914, would give approximately 13,359 tons of ash, containing 2672 tons of potash, which, at the pre-war price of kainit, would be worth nearly 51,000*l.*

IN a paper read before the Federated Malay States Chamber of Mines in March last, Mr. J. B. Scrivener, geologist, discusses the situation in the peninsula created by the increased demand for tungsten. The peninsula is one of the chief world sources of this metal, which nearly always occurs in the form of wolfram—a mixed iron and manganese tungstate—contaminated with tin-stone. To get new supplies Mr. Scrivener concludes that two courses are open. The first is to encourage prospecting in new land and to do everything to encourage the Chinese miners going into the less known parts of the granite ranges. It is anticipated that it is unlikely that large quantities of pure tungsten ores will be found, but that mixed wolfram and tin-stone areas will be discovered. The second course is to improve the facilities for the magnetic treatment of this mixture with the separation of the wolfram. For this at present only two plants exist, and much wolfram contaminated with tin ore is lying idle because of the expense of sending it for treatment. Scheelite (calcium tungstate), which cannot be magnetically purified, is in a different category. It is certainly to be hoped that the Government will do all in its power to encourage the output of a metal the usefulness of which, both for war and peace purposes, is increasing every year.

THE *Revue générale des Sciences* for May 15 contains an article by M. Zach in which he gives formulæ for the strength of flat rectangular plates encastré at the edges, and subjected to uniform pressure $p$. These formulæ are based on experiments made by Bach, and by the Naval Departments in Germany and the United States of America. The maximum bending moment occurs at the middle of the long edge of the plate, and is $\frac{pa^2}{12}$ if the ratio of breadth $a$ to length $b$ is greater than 1 : 3. The bending moment at the centre of the plate has a value less than half of this. For other ratios of $a:b$, the bending moments at the middle of the long edge and short edge respectively are $K_A\frac{pa^2}{12}$ and $K_B\frac{pb^2}{12}$, where $K_A$ and $K_B$ are factors having the following values:—

| $a:b$ | 1 : 2·5 | 1 : 2 | 1 : 1·8 | 1 : 1·6 | 1 : 1·4 | 1 : 1·2 | 1 : 1 |
|---|---|---|---|---|---|---|---|
| $K_A$ | 0·99 | 0·96 | 0·94 | 0·91 | 0·86 | 0·79 | 0·64 |
| $K_B$ | 0·03 | 0·06 | 0·09 | 0·14 | 0·22 | 0·38 | 0·64 |

At the corners of the plate the bending moment reverses in sign. The subject is of considerable importance in connection with the design of bulkheads, and we believe that the results of other experiments which have been made in this country will be available shortly.

UNDER the title, "A Scheme for the Promotion of Scientific Research," a suggestive little volume by Mr. W. B. Priest was published by Messrs. Stevens and Sons, Ltd., Chancery Lane, London, E.C., in 1908 (see NATURE, January 21, 1909, vol. lxxix., p. 345). The scheme is based on the Patent Acts, and, according to it, any person who had made a scientific discovery of a prescribed description could apply for a grant of money, the application being accompanied by a specification of the discovery. The formation of the Committee of the Privy Council for Scientific and Industrial Research has led Mr. Priest to adapt his scheme to the work of this Committee; and he has sent us a copy of a communication made by him to the Advisory Council upon the matter. One of the chief difficulties which the Council has to meet is that industrial firms are unwilling to make known valuable results of researches in their works without adequate safeguards for the protection of their interests. Mr. Priest shows in detail how his scheme may be used for this purpose, and we have no doubt it will receive careful consideration from the Advisory Council.

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## OUR ASTRONOMICAL COLUMN.

THE SOLAR ACTIVITY.—The large spot group (NATURE, June 8) is again visible, and can be easily seen with binoculars screened with smoked glass.

COMET 1916*a* (NEUJMIN).—A possible connection between this comet and Encke's comet has been traced by H. Svoboda. A comparison of their orbit elements indicates that Neujmin's comet originated in the path of Encke's comet, possibly by a partition of the latter.

THE SHOWER OF PERSEID METEORS.—There is evidence that the Perseids begin to appear during the last week in June, and that the whole duration of the shower extends over ten weeks.

This year there will be a favourable opportunity for making observations, the moon being only slightly in evidence between June 25 and July 7. If any streaking meteors are seen during this interval directed from the region of Andromeda, near the stars 37 and